

Applicant : Zhimin Liu, Mark S. Wang, and Jingyu Xu Attorney's Docket No.: 13854-032001 / OPLINK-0106
Serial No. : 09/899,481
Filed : July 5, 2001
Page : 9 of 11

REMARKS

Remarks Regarding Claim Rejections

Claim 22 has been amended. Claim 23 has been canceled. Claims 24 and 25 have been added. Claims 3, 4, 6-22, 24 and 25 are pending. Applicant notes with appreciation the allowance of claims 3, 4, and 6-21.

No new matter has been added. Support for the amended claims and support for the new claims can be found in the specification and claims as originally filed.

Applicant respectfully requests reconsideration of the action mailed August 11, 2002 in view of the foregoing amendment and these remarks.

Claim 22 was rejected under 35 USC 102(e) as anticipated by U.S. Patent No. 6, 236, 506 B1 ("Cao"). Applicant respectfully traverses the rejection. Claim 22 as amended is directed to a four-port optical loop circulator comprising a first, a second, a third and a fourth optical ports for receiving an optical beam. The circulator includes a plurality of optical components for guiding a beam received from the first port to project from the second port, for guiding a beam received from the second port to project from the third port, for guiding a beam received from the third port to project from the fourth port, and for guiding a beam received from the fourth port to project from the first port. The plurality of optical components includes a polarization beam splitter ("PBS") coupled to a walk-off crystal and configured to reflect a beam received at a lower optical path from a fourth port along a vertical direction for generating a predefined vertical displacement, and not to reflect a beam received from any other port.

Cao discloses a PBS reflecting beams received from ports B, C and D. (Fig. 8.) Accordingly, Cao does not disclose a PBS coupled to a walk-off crystal and configured to reflect a beam at a lower optical path from a fourth port, and not to reflect a beam received from any other port, as is clearly required in claim 22 as amended. Applicant respectfully submits that claim 22 is allowable.

Claim 24 is directed to the four-port closed loop optical circulator of claim 22 further including at least one prism configured to deflect light from a port regardless of the light's state of polarization. Claim 24 depends from claim 22 and is allowable for at least the reasons set forth above with respect to claim 22.

Applicant : Zhimin Liu, Mark S. Wang, and Jingyu Xu Attorney's Docket No.: 13854-032001 / OPLINK-0106
Serial No. : 09899,481
Filed : July 5, 2001
Page : 10 of 11

Claim 25 is directed to a four-port optical loop circulator comprising a first, a second, a third and a fourth optical ports for receiving an optical beam. The circulator includes a plurality of optical components including a polarization beam splitter ("PBS") coupled to a walk-off crystal and configured to reflect a beam received at a lower optical path from a fourth port along a vertical direction for generating a predefined vertical displacement. The plurality of optical components also includes a first half wave plate for changing a state of polarization ("SOP") of light from a first SOP to a second SOP to allow light to be reflected by the PBS; and a second half wave plate for changing the SOP back to the first SOP after reflection by the PBS.

In the office action of August 11, 2003, claim 23 was rejected under 35 USC 102(e) as anticipated by Cao. Applicant respectfully traverses the rejection. Cao does not teach or suggest a first half wave plate for changing an SOP to allow light to be reflected by a PBS and a second half wave plate for changing the SOP back to the first SOP after reflection by the PBS. The Examiner suggests that components 316 and 317 of Cao are functionally equivalent to a first half wave plate since light traverses both these structures prior to reflection by a beamsplitter. Components 316 and 317 are a 45 degree clockwise reciprocal rotator and a 45 degree counter-clockwise non-reciprocal rotator respectively. (Cao, Figure 7b.) Of these two components, only 316 can be described as a quarter-wave plate. Component 317 is a Faraday rotator, which is made clear from Cao's description of the behavior of Faraday rotators (col. 1, lines 48-53) and its description of the behavior of the non-reciprocal rotator 317 (col. 3, lines 31-50.) Cao teaches a quarter wave plate and a faraday rotator, not a first half wave plate for changing an SOP to allow light to be reflected by a PBS. Accordingly, Applicant respectfully submits that claim 25 is allowable over Cao.

Remarks Regarding Claims Allowed

The Applicant agrees with the Examiner that claims 3-4 and 6-21 are allowable for the reasons stated. The Applicant submits, however, that there are other reasons beyond those recited by the Examiner that these claims are allowable.


Applicant : Zhimin Liu, Mark S. Wang, and Jingyu Xu Attorney's Docket No.: 13854-032001 OPLINK-0106
Serial No. : 09 899,481
Filed : July 5, 2001
Page : 11 of 11

Applicant asks that all claims be examined in view of the amendment to the claims.

Enclosed is a \$874 check which includes excess claim fees of \$104 and the Request for Continued Examination fee of \$770. Please apply any other appropriate charges or credits to deposit account 06-1050.

Respectfully submitted,

Date: November 11, 2003

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